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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/589,184	07/02/2007	Kyung-hyun Ko	YEI0012US	6070

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CANTOR COLBURN, LLP  
20 Church Street  
22nd Floor  
Hartford, CT 06103

EXAMINER
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BAREFORD, KATHERINE A

ART UNIT	PAPER NUMBER
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1792

NOTIFICATION DATE	DELIVERY MODE
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08/27/2009

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

usptopatentmail@cantorcolburn.com

<b>Office Action Summary</b>	<b>Application No.</b> 10/589,184	<b>Applicant(s)</b> KO ET AL.	
	<b>Examiner</b> Katherine A. Bareford	<b>Art Unit</b> 1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 23 July 2009.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) 9-18 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 August 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>8/11/06</u> .   | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### *Election/Restrictions*

1. Applicant's election without traverse of Group I, claims 1-8, in the reply filed on July 23, 2009 is acknowledged.

2. Claims 9-18 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on July 23, 2009.

The Examiner notes that claims 17-18 are grouped with Group II as noted in the interview summary of July 8, 2009.

### *Specification*

3. The disclosure is objected to because of the following informalities: at page 9, line 22, the Examiner notes that US Patent No. 5,305,414 is not invented by Alkhimov as described.

Appropriate correction is required.

### *Claim Objections*

4. Claim 1 is objected to because of the following informalities: in claim 1, line 9, "an supersonic" should be "a supersonic" for correct grammar.

Appropriate correction is required.

*Claim Rejections - 35 USC § 112*

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6. Claims 1-8 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for using a cold spraying method where the particles are not heated to the melting point, does not reasonably provide enablement for general spraying with a high pressure gas through a supersonic nozzle. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention commensurate in scope with these claims.

In the invention as described in the application (see the title and page 11, line 13 through page 12, line 1 of the specification), the described application method is specifically by cold spraying without heating the particles to the melting point. However, the claim would allow for heating to the melting point through a supersonic nozzle (such as with high velocity oxy fuel coating). Since the present application is specifically limited to the described cold spraying, one of ordinary skill in the art would not think that the invention would work with other possible methods, and one of ordinary skill in the art would have to perform undue experimentation to test every possible method to see what would work.

The other dependent claims do not cure the claims from which they depend.

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claims 1-8 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1, lines 4-6 and 7-9, lines 4-6 provide "feeding powder . . . onto the mother material" – providing an application step, and lines 7-9 provide "supplying high pressure gas . . . applying the metal powder onto the mother material by spraying . . ." -- which appears to provide another application step. Thus, it is confusing if two application steps are provided or only one to apply the metal powder. For the purpose of examination, the Examiner has treated the claim as requiring only one application step using the high pressure gas and spraying, but applicant should clarify the claim language.

Claim 1, lines 4-6, the reference to "A" and "B" is not clarified as to what they refer to. For the purpose of examination, the Examiner has treated the claim as requiring A and B to each be one of the listed metals, but applicant should clarify the claim language.

Claim 1, lines 7 and 9, "high" is confusing as to what pressure is used. The term "high" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention, since one would not know what is considered "high" as opposed to "average" or "low". For the purpose of examination, the Examiner has treated the claim as requiring the gas to have a pressure.

The other dependent claims do not cure the defects of the claims from which they depend.

### *Claim Rejections - 35 USC § 102*

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

10. Claims 1-8 are rejected under 35 U.S.C. 102(b) as anticipated by Gillispie et al (US 2003/0207148).

Claim 1: Gillispie teaches a method of forming a coating layer on a mother (substrate) material. Paragraphs [0035], [0040] and [0062], for example. A substrate is provided. Paragraph [0040]. Metal powder is provided that includes at least two different metals – Al and Zn, where Al =A and Zn=B (for example) and the weight ratio

of A to B is x amount A and 1-x amount B. Paragraphs [0048] (note measurements are by weight), [0062] and Table 2. A high pressure gas is provided to the powder and the metal powder is provided on the substrate by spraying the metal powder using the high pressure gas through a supersonic nozzle. Paragraphs [0010], [0011], [0017] and [0037]–[0038]. The coated substrate is then heat treated. Paragraphs [0060], [0062] and Table 2 (the brazing at 600 degrees C heat treats the coated substrate, and while a joint is formed, a coated layer of the "brazing material" is present on the substrate as in figures 7 and 8). This heat treating would inherently provide the "porous" coating layer, as the claim indicates that the "heat treating" forms the porous coating layer and the heat treating temperature is within the range that applicant indicates is acceptable to form the porous coating layer (600 degrees C is within the range of claims 5 and 6). Paragraphs [0060], [0062] and Table 2.

Claim 2: the powder can have an alloy of A and B (Zn-Al alloy, for example). Paragraph [0036].

Claim 3: A can be Al and B can be Zn. See paragraph [0062] and Table 2, for example (60 % Al and 40 % Zn).

Claim 4: As to providing a compressed gas as the high pressure gas; Gillispie teaches to use the process of US 6,139,913 to provide the sprayed particles, including providing the high pressure gas (paragraphs [0011], [0017]), and incorporates US 6,139,913 by reference (paragraph [0017]) so its teaching is part of Gillispie.

Furthermore US 6,139,913 teaches to provide the high pressure gas as a compressed gas

and to preheat the compressed gas (at column 3, lines 20-35). Gillispie also provides that the gas stream is preheated (paragraph [0038]).

Claim 5: the heat treatment of the coated substrate is at a temperature of 600 degrees C, which is between a eutectic temperature of the combination of A and B (which the Examiner takes Official Notice is approximately 382 degrees C for a Al-Zn) and a melting point of the metal having the higher melting point of A and B (which the Examiner takes Official Notice for aluminum is at approximately 660 degrees C). Paragraph [0062] and Table 2.

Claim 6: the heat treatment of the coated substrate is at a temperature of 600 degrees C. Paragraph [0062] and Table 2.

Claim 7: the changing of x changes the composition of the powder. See Table 1 and Table 2 showing changes in composition and paragraph [0063] for example.

Claim 8: the gas can be air. Paragraph [0011].

### *Conclusion*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Katherine A. Bareford whose telephone number is (571) 272-1413. The examiner can normally be reached on M-F(6:00-3:30) First Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy H. Meeks can be reached on (571) 272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Katherine A. Bareford/  
Primary Examiner, Art Unit 1792